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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/761,702	01/21/2004	Meng-Hung Chen	10113671	3361

34283 7590 12/12/2006

QUINTERO LAW OFFICE  
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SANTA MONICA, CA 90404

EXAMINER

WARREN, MATTHEW E

ART UNIT PAPER NUMBER

2815

DATE MAILED: 12/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/761,702	Applicant(s) CHEN, MENG-HUNG	
	Examiner Matthew E. Warren	Art Unit 2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 September 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3-7,9,27 and 28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-7,9,27 and 28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

This Office Action is in response to the Amendment filed on September 30, 2006.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-7, 9, 27, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liang et al. (US 6,368,952 B1) in view of Chiang et al. (US 5,817,572) and Liu et al. (US 6,284,642 B1).

In re claim 1, Liang et al. shows (fig. 6) a contact structure of a device, comprising; a substrate (10) having a transistor of the device thereon, the transistor having a raised gate electrode (16a), a drain region and a source region (18a, 18b); a composite dielectric layer, sequentially having a first dielectric layer (20a), barrier layer (26a), and second dielectric layer (28a), directly on the transistor, the first dielectric layer comprising polyimide (col. 6, lines 7-29) the composite dielectric layer having an opening exposing the drain region; and a tungsten (22a) or polysilicon layer filling the opening, wherein the thickness of the first dielectric layer (4000-7000 Å) (col. 6, lines 27-29) is thicker than the second dielectric layer (3000-5000 Å) (col. 9, lines 37-45). Liang shows all of the elements of the claims except the contact specifically being a bit line contact structure of a memory device. Liang discloses (col. 4, lines 27-45) that the

Art Unit: 2815

invention pertains to FETs within semiconductor integrated circuits. It is well known that semiconductor FETs may be memory devices (such as DRAMs) that have bit line contact structures. However, Chiang et al. discloses (col. 7, lines 28-37 and col. 12, lines 44-52) that the an inventive contact structure can be used as a bit line contact. The contact is also formed in a memory device. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Liang by using the contact structure as a bit line contact because Chiang teaches that memory devices employ bit line contacts.

Liang already shows that tungsten (22) fills a lower portion of the opening and copper fills the upper portion (32) of the opening. Liang and Chiang shows all of the elements of the claims except the tungsten or polysilicon layer filling the opening of the composite dielectric layer. Although Liang and Chiang do not explicitly show such a limitation, it is well known in the art that tungsten and polysilicon are known fill materials used for filling entire vias, plugs, and contact holes. Liu shows (fig. 5) a composite dielectric layer (12, 14, 16, 18) having a contact hole (38) filled with copper, polysilicon, or tungsten (42). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the contact structure of Liang and Chiang by filling the composite dielectric with tungsten or polysilicon because Liu teaches that such materials are suitable for filling an opening for a composite dielectric layer.

In re claims 3-7 and 9, Liang discloses that the first dielectric is 4000 Å thick, that the barrier layer (26) is SiN (col. 7, lines 60-63 and col. 8, lines 57-62), the barrier layer has a thickness of 300 Å (col. 9, lines 1-4), the second dielectric layer (28) comprises an

Art Unit: 2815

oxide layer (col. 6, lines 7-29 and col. 9, lines 36-45), and that the second dielectric layer is 3000 Å thick (col. 9, lines 36-45). The tungsten layer (22) is 4000 Å because it has the same height as the first PMD layer (20).

In re claims 27 and 28, Liang discloses (col. 6, lines 7-29) that the polyimide is fluorinated (fluorinated polymer). The first dielectric layer is polysilsesquioxane because one of the dielectrics used is a silsesquioxane.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1, 3-7, 9, 27, and 28 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

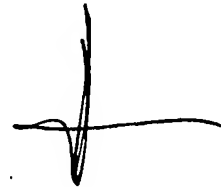
Art Unit: 2815

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew E. Warren whose telephone number is (571) 272-1737. The examiner can normally be reached on Mon-Thur and alternating Fri 9:00-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Parker can be reached on (571) 272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



KENNETH PARKER  
SUPERVISORY PATENT EXAMINER

MEW

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December 9, 2006